

GIS habitat suitability models identify species-specific bat hotspots: from home range to landscape scale

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Sophisticated technical tools are needed to obtain ecological information from the secretive life of bats. But these methods have limitations regarding time and space: radio-tracking sessions represent only a temporal fragment of an individual bat's ranging behaviour and echolocation recordings hardly ever cover the entire distribution. However, the objectives of such studies are often general statements about a whole bat colony or even about the entire species' distribution.

GIS models, specifically the Ecological Niche Factor Analysis (ENFA), help to generalise representative information and to derive spatial predictions. On a small scale, we applied this procedure to radio-tracking data of some of the last lesser horseshoe bats *Rhinolophus hipposideros* in Germany. Our results show that extrapolation of radio-tracking locations of a few individuals through environmental niche parameters yields in promising spatial predictions of the whole colony. On a large scale, we investigated the distribution of *Pipistrellus pygmaeus*, a rare bat in Switzerland. According to the resulting habitat suitability maps, we expected *P. pygmaeus* to occur in additional river valleys in Switzerland. The confirmation of some of these predictions confirmed the validity of the model and resulted in a re-assessment of the conservation status of this species.